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Ministry of Natural Resources

Inventory of Research and Development Projects

1985

Ontario

Ministry of Natural Resources

Hon. Vincent G. Kerrio
Minister

Mary Mogford
Deputy Minister

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MINISTRY OF NATURAL RESOURCES
INVENTORY OF
RESEARCH AND DEVELOPMENT PROJECTS 1985

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*** Now reporting to the Ministry of Northern Affairs & Mines**

MINISTRY OF NATURAL RESOURCES
INVENTORY OF RESEARCH AND DEVELOPMENT PROJECTS
1985

Research and development have always played a significant role in supporting the goals, objectives and long-term strategies of the Ontario Ministry of Natural Resources. This report represents a comprehensive inventory of the ministry's research and development activities

The objective of this inventory is to allow researchers and users of knowledge generated by the ministry's scientific activities to see what is being done in their area of interest. The inventory represents projects that are in progress or approved as of April 1, 1985. Every attempt has been made to ensure that all projects have been included.

Readers will note that many projects are carried out on behalf of the ministry by the private sector and by universities.

Researchers, clients and other interested persons are encouraged to contact the researchers or the office concerned for further information about any particular project.

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MINISTRY OF NATURAL RESOURCES
INVENTORY OF RESEARCH AND DEVELOPMENT ACTIVITIES
1985

AVIATION AND FIRE MANAGEMENT CENTRE

PROJECT	PRINCIPAL INVESTIGATORS	LOCATION
Provision of direction, technical support and assistance to the Fire Research Program, Great Lakes Forest Research Centre, Canadian Forestry Service. Encompasses research into fire behaviour, prescribed burning, fire ecology and fire prediction systems.	R.J. Drysdale	1
Development and implementation of a prototype Computer-based Decision Support System for the Aviation and Fire Management Program.	R.J. Drysdale R.J. Cote P.C. Ward	1
Implementation and evaluation of Decision Support Systems for the Aviation and Fire Management. Joint project with Dr. P.H. Kourtz and Fire Management Systems Group, Petawawa National Forestry Institute, and Dr. D. L. Martell, University of Toronto.	P.C. Ward	1,2

Evaluation of Current methods available to predict soil moisture and drought conditions. Joint with Scientific Services Section, Atmospheric Environment Service, and Fire Research Group, Great Lakes Forest Research Centre.	R.J. Drysdale	1
Implementation and evaluation of precipitation radar systems for aviation and fire management purposes.	P.C. Ward	1,3
Development and evaluation of high altitude thermal infrared reconnaissance systems for fire mapping and incipient fire detection. Joint project with Ontario Centre for Remote Sensing.	P.C. Ward	1
Implementation and evaluation of remote weather stations and satellite and radio telemetry systems.	P.C. Ward	1
Analysis of the size, distribution and effectiveness of the OMNR fire weather station network. Joint project with Scientific Services Section, Atmospheric Environment Service.	P.C. Ward R.J. Drysdale	1
Analysis of the productivity and effectiveness of ground and aerial	P.C. Ward R.J. Drysdale	1

fire suppression resources.

Evaluation of ignition systems, patterns and devices in prescribed burn and wildfire burn-out operations	P.C. Ward	1

CONSERVATION AUTHORITIES AND WATER MANAGEMENT

PROJECT	PRINCIPAL INVESTIGATORS	LOCATION
Canada/Ontario Study on The Development of Residential Stage-Damage Curves	Paragon Engineering Limited	Kitchener
Snow hydrology Study, Phase IV. Evaluation of snowmelt - infiltration - runoff components	MacLaren Plansearch Inc.	Toronto
Northern Ontario Hydrology Study, Phase III - Research Watershed Program, Year I - Preparation of Study Plan	S.A. Kirchefer Ltd. and Computational Hydraulics Group	Sudbury, Hamilton
Dynamic Wave Flood Routing Sensitivity Study	N. Kouwen	6
Pilot Study on the Integration of The SCS Runoff Curve Number (CN) Digital Mapping and The HYMO-VUH Hydrologic Model	Collins & Moon Ltd.	Guelph
Flood Plain Roughness Characteristics Study	Proctor & Redfern Group	Don Mills
Data Logger Polling and Management System	F.H. Schaedlich Consulting Limited	Toronto

Canada/Ontario Study on Ice Jams on Small Rivers (Remedial Measures and Monitoring).	Cumming-Cockborn & Associates Limited	Willowdale

FISHERIES

	PRINCIPAL INVESTIGATORS	LOCATION
The effects of aquatic acidification on fish growth and production	J.M. Casselman	21
Age and growth determination of fish	J.M. Casselman	21
Identification and differentiation of hatchery and native fish from calcified tissue	J.M. Casselman	21
Fish sampling techniques--observational and process variability	J.M. Casselman	21
Dynamics of natural populations of brook trout	J.M. Fraser	21
Assessment of wild and hybrid trout strains	J.M. Fraser	21
Experimental management of small Precambrian Shield lakes	J.M. Fraser	21
Lake Simcoe fish community dynamics	D.O. Evans	21
Lake whitefish population structure	D.O. Evans	21
Distribution and comparative ecology of rainbow smelt	D.O. Evans	21

Early life history dynamics of lake whitefish and cisco	D.O. Evans	21
Early life history - laboratory studies	D.O. Evans	21
Status of the lake whitefish stocks of Lake Opeongo	D.O. Evans	21
Sanctuary lakes as refugia for endangered fish stocks	D.O. Evans	21
Fish community dynamics in St. George Lake	D.J. McQueen A.M. McCombie D.O. Evans	21
Dissolved oxygen requirements of lake whitefish	V. Cox J.S. Tait D.O. Evans	21
Estimating potential yields of fishes	R.A. Ryder	22
Differences among coregonid stocks	P.E. Ihssen	21
Genetic differentiation of lake trout stocks	P.E. Ihssen	21
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Studies on rainbow and brown trout	P.E. Ihssen	21
Research in support of fish culture and aquaculture	P.E. Ihssen	21
Smallmouth bass population dynamics	B.J. Shuter J.A. MacLean	21

	P.E. Ihssen	
Lake Opeongo creel survey	B.J. Shuter J.A. MacLean H.A. Regier	21
Effects of acid rain on survival of young smallmouth bass and whitefish	B.J. Shuter P.E. Ihssen	21
Review of methods for setting catch quotas	B.J. Shuter J.F. Koonce	21
Effects of exploitation on walleye	P.J. Colby W. Momot	22
Forage fish studies	P.J. Colby	22
Development of a quality fishing index for walleye angling fisheries	P.J. Colby	22
Movements of Lake Trout (Harkness Lab.)	J.A. MacLean J. Murdock D. Cucin	21
Population dynamics and distribution of smallmouth bass (Harkness Lab.)	J.A. MacLean et al.	21
The fish community of Lake Opeongo (Harkness Lab.)	D. Cucin	21
Larval fish and zooplankton in shield lakes (Harkness Lab.)	D. Cucin B. Monroe D. Faber	21

Index fishing in Lake Erie and Lake St. Clair	S.J. Nepszy	24
Juvenile fish study	S.J. Nepszy	24
Yearling walleye index for western Lake Erie	S.J. Nepszy	24
Walleye tagging in western Lake Erie	S.J. Nepszy	24
Limnology of Lake St. Clair	J.H. Leach	24
Fish community study - Mitchell Bay, Lake St. Clair	S.J. Nepszy	24
Common white suckers and lamprey	B.A. Henderson	27
Lake trout hatching success in Lake Manitou	B.A. Henderson	27
Quota analysis: Lake Erie	B.A. Henderson M. Petzold	27
Summary of South Bay data series	B.A. Henderson F.E.J. Fry	27
Population dynamics of whitefish stocks	J.J. Collins	27
Gill net efficiency studies	J.J. Collins	27
Gill net selectivity studies	J.J. Collins	27
Lake Huron pink salmon study	J.J. Collins	27
Lake herring study	J.J. Collins	27

Early life history of whitefish in relation to community and environmental variables	J.A. Reckahn	27
Whitefish growth	W.J. Christie	25
Slimy sculpin production	W.J. Christie	25
Warmwater fish community comparison	W.J. Christie	25
Lake trout	W.J. Christie	25
Bioenergetics of walleye in the Bay of Quinte	D.A. Hurley	25
Fish populations of the Bay of Quinte, Lake Ontario	D.A. Hurley	25
Experimental gill net program	D.A. Hurley C.K. Minns	25
Pacific salmon studies	W. Kwain	22
Pink salmon studies	W. Kwain	22
Decline of the Goulais River walleye population	W. Kwain	22
Interactions between chinook salmon and rainbow trout	W. Kwain	22
Fisheries acidification program	G. Beggs J. MacLean D.P. Dodge	26

Fisheries and water chemistry surveys	D. Wales J. Matuszek	26
Comparative lakes project - a field test of laboratory derived toxicity thresholds	J. Gunn G. Beggs	26
Trend through time studies	T. Stewart F. Hicks	26
Toxicity studies and process research	J. Gunn G. Beggs	26
Modelling of Impacts of Acid Rain	G. Beggs J. MacLean K. Minns	26
Experimental neutralization program	D.P. Dodge J. Pagel (MOE)	26
Winter ecological investigations of stream fishes	R. Cunjac	26/6
Testing of fish counting fence and monitoring of downstream movement of rainbow trout populations	R.M. Biette	26
Furunculosis detection by organ culture	K.K. Loftus R.M.W. Stevenson (Microbiology)	4
Antibiotic sensitivity and plasmid profiles of Ontario isolates of Aeromonas salmonicida (Furunculosis bacteria)	K.K. Loftus R.M.W. Stevenson (Microbiology)	4
Motile aeromonad infections of fish	K.K. Loftus	4

	R.M.W. Stevenson (Microbiology)	
Bacterial kidney disease studies	K.K. Loftus	4
Experimental cage culture	A.J. Sippel	4
The arginine requirements of young rainbow trout	C.Y. Cho W.D. Woodward (Nutrition)	4
The pantothenic acid requirements of young rainbow trout	W.D. Woodward C.Y. Cho (Nutrition)	4
Thiamin requirement studies in rainbow trout	J.W. Hilton	4
Lake Simcoe lake whitefish project	J.D. Hynes	26
Intensive larval walleye culture	P. Richard	62
Intensive fingerling walleye culture	P. Richard	62
Computerized distribution and integrational mapping of fish species and related aquatic habitat parameters	G. Gale	26
The behaviour and ecology of Hudson Bay Lowland brook trout in the Sutton River, Ontario	S. Toole P. Steele	38 5
Winter ecological investigation of stream fishes in the upper Credit River catchment basin	J. Imhof R. Biette R. Cunjak	52 26 6

Sturgeon yield estimation/model	Ecologistics	Geraldton District
Rehabilitation of fish habitat	R. Biette J. Imhof	26 52
Protection of fish habitat by means of Modified Management Areas	J. Allin D. Dodge	26
Assessment of trout stocking in small Ontario lakes	A. Sippel	26
Synthesis of bass, lake trout, whitefish communities interactions	D. Loftus	43
MSY estimation for lake trout, pike and sucker community	P. Ryan	22
Synthesis of methods of inventory, assessment and fish production in large rivers (Large River Symposium, 1986)	D.P. Dodge	26
Evaluations of artificial tire reefs as a management tool in the rehabilitation of Rondeau Bay, a turbidity stressed warm water fishery	T.A. Duckworth	51
Design and monitoring of small mesh trap nets for commercial bait fishing	K. Chambers K. Mills (Dept.F&O)	19
Enhanced production of commercial bait fish waters	K. Chambers K. Mills (Dept.F&O	19

FORESTRY

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Chemotaxonomy of hybrid poplar and willow to identify parentage	H. Anderson	16
Physical, chemical and biomass properties of fast-growing hardwoods.	H. Anderson	16
Physiological genetics of jack pine and other hard pines.	G. Buchert	16
Breeding of hard pines.	G. Buchert	16
Selection and testing of poplar progenies and clones for use in northern Ontario, with emphasis on frost resistance.	G. Buchert	16
Testing of poplar progenies and clones for use in southern and central Ontario.	G. Buchert	16
Establishment, monitoring, assessment and analysis of test plantations of alder, balsam poplar, aspen and willow species and varieties. (Gene Pools and Variation studies)	G. Buchert	16
Interspecific hybridization of native and exotic white pine to improve growth and pest resistance.	G. Buchert	16

Species introduction - piceta; genotype x environment reaction.	A. Gordon	17
Racial and interspecific variation and genotype x environment interaction in spruce populations.	A. Gordon	17
Spruce hybridization.	A. Gordon	17
In vitro propagation of forest trees.	R. Ho	16
Effects of gibberellic acid application on cone production in spruces.	R. Ho	16
Accelerated growth for inducing early cone production in black spruce.	R. Ho	16
Cone induction by girdling and root-pruning in white spruce.	R. Ho	16
Haploid plant induction to produce genetically pure lines for breeding purposes.	R. Ho	16
Protoplast isolation and fusion.	R. Ho	16
Aspen clonal study and collection of roots for a clonal bank.	D. Weingartner	18
Collection and introduction of new species and clones suitable for biomass production.	C. Papadopol	16
Seed yield and quality related to cone production in seed production areas and	D. Skeates	16

seed orchards.

Establishment and continued assessment of white spruce provenance trials.	D. Skeates	16
Development of alternate stock production systems.	D. Skeates	16
Greenhouse techniques to improve overwintering of container stock production.	S. Colombo	16
Plant stock moisture stress standards. Root growth capacity and plant moisture techniques.	S. Colombo	16
Lifting and storage of bare root nursery stock.	C. Glerum	16
Nursery stock grades and quality.	C. Glerum	16
Biochemical compounds in nursery stock as indicators of dormancy and frost hardiness trends.	C. Glerum	16
The relative performance of bare root and container stock types.	C. Glerum	16
Effect of fertilization and irrigation on seedling (bare root and container) establishment physiology and performance after outplanting.	K. McClain	18
Water relations and associated morphology of conditioned Douglas Fir and jack pine container seedlings subjected to periods of drought stress.	K. McClain	18
Effect of seedbed density and nitrogen	K. McClain	18

fertilization on nursery growth and post-planting performance of white and black spruce.		
Modelling of the atmospheric demand for evapotranspiration.	C. Papadopol	16
Silvicultural control of yellow birch and sugar maple regeneration and recruitment; upland hardwood stand management (tending) research.	H. Anderson P. Jaciw	16
Techniques of establishing mini-rotations (biomass farms) of hybrid poplar, willow and other hardwoods.	H. Anderson P. Jaciw	16
Cultural techniques - species introduction (Alnus glutinosa, Robinia spp.)	P. Jaciw	16
Development of biomass production techniques, effects of applying chemo-mechanical site preparation, stock and planting treatments and spacing.	P. Jaciw	16
Stand establishment of upland hardwoods and associated species in southern Ontario.	P. Jaciw	16
Cultural techniques (factors of growth) coppicing black locust.	P. Jaciw	16
Completion dynamics during plantation establishment in boreal mixedwoods.	B. Macdonald	18
Root regeneration of black spruce seedlings in relation to time of spring lifting and length of storage.	K. McClain	18

Effect of time of lifting and storage on performance of black spruce.	K. McClain	18
Influence of water availability on biomass accumulation of mini-rotation poplar.	C. Papadopol	16
Conversion of poor coniferous stands. Establishment of hardwoods, silvicultural treatments.	G. Stroempl	16
Scarification for aspen regeneration.	D. Weingartner	18
Strip cutting in aspen for natural and artificial regeneration.	D. Weingartner	18
Silvicultural control of growth quality and defect development in sugar maple.	H. Anderson	16
Biomass productivity of young, intensively cultured coniferous plantations.	H. Anderson	16
Spruce forest ecosystems: Productivity, stand dynamics in relation to budworm.	A. Gordon	17
Spruce forest ecosystems: Productivity, spruce sampling model, supplementary data on white spruce.	A. Gordon	17
Development of mixedwood forest growth models to refine polewood and sapling tending in boreal mixedwood.	B. MacDonald	18
Stand development after improvement cuttings and thinnings in tolerant hardwoods,	M. McLean	Dorset

Algonquin Region.

Effects of drainage and fertilization of lowland black spruce.	K. McClain	18
Influence of time and intensity of thinning on aspen growth in the boreal forest.	D. Weingartner	18
Biomass energy. Analysis of poplar, willow, alder and locust for chemical composition related to energy (extractives) and fermentation potential (carbohydrates).	H. Anderson	16
Determination of biomass productivity and quality in mini-rotation hybrid poplar and willow.	H. Anderson	16
Water stress effects on physiological processes of poplar clones.	C. Papadopol	16
Nutrient drain in willow and poplar farming.	H. Anderson	16
Site regions; concepts, classification and relevance for (forest) land management.	D. Burger	16
Productivity, nutrient cycling, dynamic and static sampling in spruce forest ecosystems.	A. Gordon	17
Air seeder, testing of new seeder.	M. McIntyre	19
Jack pine grafting trials - Dryden nursery.	W.D. Baker B. Polhill	19
Seed orchard management - irrigation for Sb and Sw.	W.D. Baker	19

Black spruce rooted cutting trial.	W.D. Baker	19
Evaluation of nursery stock quality.	R.J. Day	15
Multiple leadering in coniferous nursery stock.	G. Hofstra	27
Rehabilitation of effluent beds at McCrae Pt. Provincial Park by means of plant evapotranspiration and improved aeration.	J.F. Griffin	52
Forest nursery soils research.	V. Timmer	9
Drought tolerance and physiological mechanisms of resistance in northern coniferous seedlings.	E.B. Dumbroff	6
Preliminary study of wood quality and blister/rust-resistant white pine.	J. Balatinez	9
Mineral mound experiment (phase V).	K.B.M. Forestry Consultants Inc.	
Incremental growth of paper pot container nursery stock.	Metcom Forestry Service	
Development of a mechanized container planting machine for use in organic soils.	Canadian Forestry Service	

FORESTRY - PEST CONTROL

PROJECT	PRINCIPAL INVESTIGATORS	LOCATION
Utilization of the egg parasite *Trichogramma minutum* as a biological control alternative of the spruce budworm.	S.A. Nicholson	20
Development of spruce budworm control strategies and techniques in high-value white spruce plantations.	S.A. Nicholson	20
Establishing the effect of continued defoliation on growth and yield of young white spruce.	S.A. Nicholson	20
Characterization and assessment of aerial herbicide atomization/delivery systems.	S.A. Nicholson R.A. Campbell	20
Assessment of pesticide delivery techniques.	S.A. Nicholson	20
Cylindrocladium root rot and its control in Ontario forest tree nurseries.	B.H. McGauley	20
Control of *Fomes annosus* with *Peniophora gigantea*.	B.H. McGauley	20

Effect of cylindrocladium root rot on outplanted black spruce.	B.H. McGauley	20
Spore trapping to determine the need for nursery fungicide applications.	B.H. McGauley	20
Maple decline - principal causes.	B.H. McGauley	20
Oak dieback - principal causes and effects on trees.	B.H. McGauley	20
Fomes annosus colonization of Roundup treated red pine.	B.H. McGauley	20
Quantification of drift of aerially applied Velpar.	R.A. Campbell S.A. Nicholson	20
Determination of optimum timing for release of lowland spruce with 2,4-D	R.A. Campbell A. Lehela	20
Generation of efficacy and crop tolerance data to support registration and optimum use of Roundup.	R.A. Campbell A. Lehela	20
Generation of efficacy and crop tolerance data to support registration and optimum use of Velpar.	R.A. Campbell A. Lehela	20
Velpar soil residue persistence study.	R.A. Campbell	20
Development of herbicide assessment methodology.	A. Lehela	20
Mass rearing technique of spruce	J.A. Laing	27

budworm virus *Trichogramma minutum*.

Pesticide use in forestry.	C.D. Fowle	12
Branch sampling in respect of insect control assessment.		42
Assessment of chemical spraying program against spruce budworm.		42
Herbicide research in respect of bare-root nurseries.	C. Waywell	

FORESTRY - NORTHERN FOREST DEVELOPMENT UNIT

PROJECT	PRINCIPAL INVESTIGATORS	LOCATION
To develop operational prescriptions for release of underplanted conifers from hardwood brush and herbaceous competition using ground-applied 2,4-D and roundup.	R. Greenwood C. Kirkland	56 58
To screen pre-emergent agricultural herbicides applied at various rates for effectiveness of preplant competition control and response of jack pine and black spruce.	R. Greenwood	56
To evaluate effectiveness of various seed treatments in enhancing germination and survival of jack pine.	R. Greenwood R. Galloway	56 58
Planting stock trial to assess stock x site preparation interaction on intensive forest management areas.	V. Weam R. Greenwood	56
Production of composite soil productivity maps of the Northern Region to identify the best growing sites using ARC/INFO (1:100,000 scale)	W. Raitanen	56
Intensive forest management soil surveys conducted at 1:50,000 scale on selected prime lands scheduled for harvesting within 10 years to provide common reference base for silvicultural	W. Raitanen	56

prescriptions and forest management planning.		
Development, growth and yield in managed plantations and natural stands of jack pine and black spruce, by sites, derived from growth layer analysis.	V. Wearn R. Greenwood	56
Demonstration and development project in black spruce peatland drainage in the Clay Belt of Northern Ontario to enhance growth and regeneration.	V. Wearn M. Rosen	56 39
Improvement of jack pine plantation performance on a low fertility site through fertilization.	R. Greenwood C. Kirkland	56 57
To assess and report on all existing forest research and development trials established in the Northern Region since 1920 by government, industry and university.	V. Wearn W. Marito T. Wilson W. LeClair	56 39 59 58
Assessment of spacing/age relationships in jack pine using Nelder plots.	R. Greenwood R. Galloway	56 58
Controlled black spruce crossing program to grow donor plants for production use at the Northern Forestry Clonal Centre, Moonbeam.	V. Wearn R. Sinclair	56 56
Identification and collection of material for propagation of phenotypically superior trees to develop seedling seed orchards of	R. Greenwood V. Wearn	56 56

black spruce and jack pine.

Establishment of progeny tests in jack pine and black spruce to determine the genetic worth of plus tree selections and to form a basis for roguing of seedling seed orchards.	R. Greenwood V. Wearn	56 56

FORESTRY - FAST GROWING HARDWOODS UNIT

PROJECT	PRINCIPAL INVESTIGATORS	LOCATION
ESTABLISHMENT:		
Determination of the safety and efficacy of various herbicides for use on new hybrid poplar plantations.	B. Barkley	29
Determination of the performance of different hybrid poplar clones on various soil types.	B. Barkley	29
Investigation of the performance of various types of poplar planting stock, i.,e. cuttings, 1+0, 2+0, etc.	B. Barkley	29
Investigation of site preparation and conversion techniques including herbicides, fertilizers and removal of surface water.	B. Barkley	29
Comparison of various planting densities on survival, growth, yield and form.	B. Barklay	29
Comparison of various planting configurations on survival, growth, yield and form.	B. Barkley	29
Calibration of poplar establishment technology for production of willow for energy.	B. Barkley	29

MANAGEMENT:

Determination of safety and efficacy of applying various herbicides on mid-rotation plantations of hybrid poplar.	B. Barkley	29
Development of guidelines for tending poplar coppice.	B. Barklay	29
Development of pruning guidelines.	B. Barkley	29
Determination of poplar response, on various sites, to different rates of chemical fertilizers.	B. Barkley	29
Determination of poplar response to fertility treatments including sludge application, cover crops and inter-planting with nitrogen-fixing species.	B. Barkley	29
Determination of safety and efficacy of various herbicides for use in hybrid poplar plantations for specific weed species,e.g. horsetail, vetch.	B. Barkley	29
Collection of information to extend the label use of certain herbicides to include hybrid poplar.	B. Barkley	29
Investigation of appropriate management techniques to maximize product yield and reduce rotation of natural aspen stands in Ontario.	B. Barkley	29
Determination of cost effective plantation management practices	B. Barkley	29

through economic package development in combination with growth and yield studies.		
ASSESSMENT:		
Characterization of poplar clones in the coppicing state.	B. Barkley	29
Establishment and monitoring of populetum containing representative clones for characterizing clones according to crown shape, bole shape, etc.	B. Barklay	29
Determination of extent and conditions surrounding canker occurrence in hybrid poplar e.g. clone specificity.	B. Barkley	29
Determination of poplar wood quality: - field survey for degree of staining by clone - collection of specific gravity values by clone.	B. Barkley	29
Field assessment, by clone, of damage to poplar due to frost, insects and disease.	B. Barkley	29
Field assessment of soil fertility status of soils in present and future hybrid poplar sites.	B. Barkley	29
Development of growth and yield standards for fast growing hardwoods.	B. Barkley	29

Development of standards for quality of harvest.	B. Barkley	29
GENETIC IMPROVEMENT:		
Preservation of the native (local) poplar gene pool.	B. Barkley	29
Recombining gene pool in an attempt to improve defined desirable qualities.	B. Barkley	29
Testing of progeny for direction for future breeding and clonal selections for inclusion in regular testing program.	B. Barkley	29
Development of essential tree improvement techniques to fulfil objectives: e.g. pollen storage tests, pollen viability tests, designing appropriate breeding cage, etc.	B. Barkley	29
Screening of exotic fast growing hardwood species.	B. Barkley	29

GEOLOGY

N.B. GEOLOGY PROGRAMS ARE NOW PART OF THE MINISTRY OF NORTHERN AFFAIRS & MINES

PROJECT	PRINCIPAL INVESTIGATORS	LOCATION
Age dating. Gold mineralization - mineralogy (Abitibi, Red Lake).	S. Marmont	63
Geological setting of the Detour Gold Mine.	S. Marmont	63
Petrology of some alkali granites (alaskites) in Ontario.	M.A. Vos	63
Remote sensing applied to vein set recognition (with OCRS).	V. Singhroy	63
Active carbon in gold deposits.	J.S. Springer	63
Mineral commodities at the re-excavated paleologic unconformity: MEIS search for the unconformity (with OCRS).	J.S. Springer	63
Gold in iron formation.	A.J. MacDonald	63
Mineral deposits of the Opapamiskan Lake area.	D.W. Piroshco H. Shields	63
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Geology of the Duport Mine, Shoal Lake, northwestern Ontario.	P.M. Smith	63
Platinum Group mineralisation in Ontario.	A.J. MacDonald	63
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Gold potential of the central gneiss belt - Grenville Province.	D. Villard	41
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Compilation map of Ontario surficial geology.	E.V. Sado	63
Quaternary geology of the Timmins area.	J.A. Richard	63
Quaternary geology of the Algonquin Park region.	M.J. Ford R.S. Geddes	63
Quaternary mapping and special projects. Hemlo area, Northern	R.S. Geddes	63

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Overburden drilling in the Black River/Matheson area.	C.M. Baker	63
Quaternary geology of the Long Point/Port Burwell area.	P.J. Barnett	63
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Quaternary geology of the Brampton area.	P.F. Karrow	63
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Quaternary geology of the Opapamiskan Lake area.	P.F. Finamore	63
Lignite resource assessment, Moose River Basin, James Bay Lowland.	P.G. Telford	63
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Ordovician stratigraphy and structural geology of Eastern Ontario.	D.A. Williams	63
Peat deposits and peatland vegetation.	J.L. Riley	63
Aggregate resources of selected areas in south western and northern Ontario.	S. Szoke	63

Determination of rare earth elements in geological materials using high performance liquid chromatography/inductively coupled argon plasma/optical emission and mass spectroscopy.	A. Vander Voet	63
Development of new or improved methods of chemical/instrumental determination of elemental components in geological materials.	C. Chan	63
Precambrian geology of the Kirkland Lake area.	L.S. Jensen	63
Precambrian geology of the Minden area, Anson and Lochlin Townships.	R.M. Easton	63
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Precambrian geology of the Bigstone Bay area, Kenora District.	J. Ayer	63
Precambrian geology of the Black River - Matheson area.	N.F. Trowell R. Johnstone	63
Lakehead - Atikokan Compilation Map	P.C. Thurston	63
Trace elements in Abitibi Volcanics	P.C. Thurston	63
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Alkalic Rocks and Carbonatites	R.P. Sage	63

Geological compilation 1:250000 of areas of Ontario underlain by Precambrian rocks.	B.O. Dressler	63
Isotopic age compilation map of Ontario.	R.M. Easton	63
Precambrian geology of the Western Birch Lake area.	G.P. Beakhouse	63
Reconnaissance stratigraphic mapping in the Uchi Subprovince.	G.M. Stott	63
Synoptic mapping in the Kakagi- Rowan Lakes area, District of Kenora.	G.W. Johns	63
Precambrian geology of Mafic/ Ultramafic intrusions of the Wabigoon Subprovince.	R.H. Sutcliffe	63
Precambrian geology of Conmee and Forbes Township, and part of the Dawson Road Lot, Thunder Bay District.	M.W. Carter	63
Detailed stratigraphic study of the Hemlo area, Thunder Bay District.	T.L. Muir	63
Precambrian geology of the White Lake - Hemlo area, Thunder Bay District.	G.M. Siragusa	63
Precambrian geology of the northeast Wawa area.	R.P. Sage	63
Mineral deposit compilation, Grenville Structural Province.	E.G. Bright	63

Lake geochemical studies (acid precipitation studies).	J.A.C. Fortescue	63
Geophysical test range (Night Hawk Lake) Timmins.	R.B. Barlow	63
Gold in felsic intrusions (Abitibi area).	M.E. Cherry	63
Alteration associated with gold mineralization (Red Lake).	A.J. Andrews	63
Palaeoplacer gold (Sudbury-Cobalt).	A.C. Colvine	63
Setting of mineralization in a greenstone belt (Shebandowan).	L. Chorlton	63
Gold mineralization at Lake of the Woods (Kenora).	J. Davies	63
Setting of mineralization in the Abitibi belt (Matheson)	P. Whittaker	63
Computerization of geology of mineralization.	G. Troop	63
Gold deposit compilation of the Sturgeon Lake area.	D. Janes	19
Gold deposit compilation of the Savant Lake area.	D. Janes	19
Dryden/Ignace Economic Geology	J. Parker	19

Kenora Data Folios Project		19
Compilation of geological, geophysical and mineral deposit data for the Pickle Lake area.	D. Janes	19
Investigation of heap leaching technology and its application to northern Ontario.	R.C. Beard	19
Investigation of the feasibility of a portable XRF gold analyser.	R.C. Beard D. Janes	19
Investigation of the feasibility of using laser technology in granite quarrying and fabricating industry.	R.C. Beard	19
Application of a portable optical ore sorter for gold deposits in northwestern Ontario.	R.C. Beard	19
Assessment of development potential of specific industrial mineral commodities and deposits in northwestern Ontario.	C. Storey	19
Building stone inventory in the Northwestern Region.	C. Storey	19
Building stone inventory in the Northcentral Region.	M. Kennedy	
Beardmore/Geraldton economic geology.	J. Mason G. White	31

Terrace Bay/Marathon economic geology.	B. Schneiders A. Speed	31
Terrace Bay/Schreiber/Marathon data folios project.	P. Perry	31
Metallogenic study of Hemlo gold deposits.	G. Patterson	31
Cobalt - base metal - platinum group elements study in Atikokan area.	A. MacTavish	31
Geology of MacGregor Township	J. Scott	31

THE FOLLOWING PROJECTS WERE APPROVED FOR 1985 FOR THE ONTARIO GEOSCIENCE RESEARCH GRANT PROGRAM

Structural signature and tectonic history of deformed gold-bearing rocks in N.W. Ontario.	W.M. Schwerdtner	9
Petrogenesis of mineralized horizons in Uchi Lake greenstones.	N.M. Evensen T.E. Krogh	9 6
Sedimentary rocks and stratabound mineralization in the Cobalt region.	J.A. Donaldson	11
Sedimentology of the Cambro-Ordovician sandstones of E. Ontario.	R.W. Dalrymple	13
Sedimentology of the Bar River Formation, Huronian subgroup	B. Rust	14
Geochemical exploration for gold.	I. Nichol	13
Geological setting and genesis of the Cameron Lake gold deposit.	D.H. Watkinson	11
Sulphur isotope studies of Archaean gold deposits.	H.P. Schwarcz	7
Clay minerals in S.W. Ontario oil reservoirs.	M.B. Dusseault	6

Sedimentology of the Long Rapids Formation.	M.J. Risk	7
Stratigraphy, sedimentology and geochemistry of parts of the Gowganda and Lorrain Formations, N. Shore, Lake Huron.	G.M. Young	5
Chloritoid in altered volcanic rocks.	J.M. Moore	11
Genesis of pegmatites in the Quetico gneiss belt of N.W. Ontario.	S.A. Kissin	15
Structure, lithology and gold mineralization along main breaks, Abitibi belt.	C.J. Hodgson H. Helmstaedt	13
Petrologic, isotopic and palaeomagnetic investigation of three areas of the Nipissing Diabase. (Geology)	A.J. Naldrett N. Evensen	9
Dating of Ontario's gold deposits. (Geology)	D. York	9
Quartz-vein-related Au (-W; scheelite) and monzonite-hosted Cu-Au mineralization, Timmins. (Geology)	E.T.C. Spooner	9
Structural studies around zones of shear, Wabigoon Subprovince.	H.R. Williams	62

Geochemical studies of formation waters, paleozoic strata, southwestern Ontario.	R.W. Macqueen R.N. Farvolden S.K. Frape P. Fritz R.H. McNut	6 6 6 6 7
Exploration for buried granular aggregates by remote sensing techniques.	M.B. Dusseault A. Kesik	6
Cyanide in gold deposits.	H.P. Schwarcz	7
Development of analytical methods for trace lanthanides.	A. Westland	14
Magnetotelluric mapping of the Porcupine-Destor Fault.	D.W. Strangway	9
The role of carbonaceous materials in precious metal deposits.	J.C. Rucklidge	9
Metal accumulation in micro-organisms with emphasis on U-Au-Ag-Cu-Zn-Fe.	W.S. Fyfe	5
Anomalous carbonate till near Marathon Ontario: Origin and applications.	S. Hicock	5
Compositional characteristics of pyrite in barren and gold mineralized veins.	N.D. MacRae H.W. Nesbitt	5
Effect of grain size on calcining properties of carbonates.	P.P. Hudec	53

THE FOLLOWING PROJECTS WERE APPROVED FOR 1985 FOR THE EXPLORATION TECHNOLOGY DEVELOPMENT FUND

PROJECT	COMPANY	LOCATION
Single receiver, frequency scanning fixed source electromagnetic system.	Androtex Ltd. A. Rajozinski	Mississauga
Production of seven frequency HEM system.	Geotech Ltd. E. Morrison	Markham
Isotope ratios and trace elements in gold and base metal occurrences in Ontario; An application of plasma mass spectrometry.	X-Ray Assay Laboratories Ltd. Dr. T. Eagles	Don Mills
A micro-processor based digital receiver console Dighem IV development project-receiver.	Dighem Ltd. Dr. D. Fraser	Mississauga
Seismic full waveform logging and seismic geotomography.	Jodex Applied Geoscience Ltd. Dr. J. Wong	Toronto
High resolution EM developments.	Lamontagne Geophysics Ltd. Dr. Y. Lamontagne	Toronto

The development of interactive interpretational software for the MAGLOG small diameter borehole system.	Morris Magnetics Dr. W. Morris	Lucan
Evaluation and development of shallow reflection seismic and ground probing radar methods.	A-Cubed Inc. Dr. A.P. Annan	Mississauga
Helicopter borne high sensitivity magnetometer/ tridirectional gradiometer based on Overhauser Effect.	Gem Systems Inc. Dr. I. Hivoic	Don Mills
Testing and demonstration of interpretation software for magnetic, EM and spectrometry inversion.	Paterson, Grant and Watson Ltd. Dr. N.R. Paterson	Toronto
The application of lake sediment geochemical surveying to gold exploration in Ontario.	X-Ray Assay Laboratories Ltd.	Don Mills
Software and hardware design to use IPV-3B/IPT-1(3005) for CSAMT survey.	Phoenix Geophysics Ltd. Dr. P.G. Halley	Willowdale
Distribution of gold in peats and its relevance to mineral exploration.	C.F. Gleeson & Associates/Terrain Analysis & Mapping Services Dr. V.N. Rampton	Iroquois/Carp

Portable broadband multiple geometry HEM.	Aerodat Ltd. Mr. R.L.S. Hogg	Mississauga
Interpretation algorithm development for MEIS II geobotanical imagery analysis.	Moniteq Ltd. Dr. S. Jain	Concord
Evaluation and field testing of the PROSPECT I AEM System.	A-Cubed Inc.	Mississauga
Development of geobotanical remote sensing technology.	Horler Information Inc. Dr. D. Horler	Ottawa

PARKS AND RECREATIONAL AREAS

PROJECT	PRINCIPAL INVESTIGATORS	LOCATION
Park use survey.	D. Hallman R. Speck	30
Park economic impact study.	D. Hallman D. Driscoll	30
Parks/Tourism user data; trends analysis.	D. Hallman D. Driscoll R. Speck	30
Manual on water resource evaluation for the provincial parks system.	H.N. Shrivastava	30
Market analysis methodology.	D. Hallman	30
Michipicoten Island biophysical survey.	W. Kershaw	33
Lady Evelyn/Smoothwater Park, biophysical survey.	W. Kershaw	33
Great Manitou bicphysical survey.	W. Kershaw	33
Great Manitou archaeological survey.	Min. of Citizenship & Culture	33
Sturgeon River/Mokobe/group systems biophysical survey.		6

The effects of prescribed burns in tall grass prairie setting at Ojibway Prairie Provincial Nature Reserve.	A. Woodliffe	51
Biophysical survey of Woodland Caribou Park.	B. Sandilands	40
Public participation workshops Woodland Caribou Park.	J. Stansbury (Hough, Stansbury & Associates Ltd.)	
Interior user study (user attitudes, perceptions and satisfaction values).	G. Wall	6

INDIAN RESOURCE POLICY RESEARCH

PROJECT	PRINCIPAL INVESTIGATORS	LOCATION
Saugeen Indian Land Claim re Treaty #45 1/2 The Saugeen and Nawash Indian Bands of Ojibwa claim that Treaty #45 1/2 of August 1836, for approximately 1.5 million acres (607,000 ha.) in the counties of Bruce, Grey, Huron, and Wellington, was not a valid surrender.	D.J. Bourgeois	60
Rat Portage Indian Land Claim (Parts 1-5) to lands identified as part of Rat Portage Indian Reserve #38B on Lake of the Woods The Rat Portage Indian Band claims that Rat Portage Indian Reserve #38B includes several islands in Lake of the Woods, and that parts of that Indian Reserve were not validly surrendered in 1919.	D.J. Bourgeois	60
Batchewana Indian Land Claim to Whitefish Island The Batchewana Indian Band claims that Whitefish Island in the St. Mary's River was never surrendered by the Indian Band. The Band requests the return of that island by the Federal Government to the	D.L. Rankin	60

Band, as well as compensation for the alleged dispossession and loss of the ancestral burial ground, fishing station and campground(s) located on Whitefish Island.

Batchewana Indian Land Claim to part of the bed of Lake Superior — L.C. Hansen — 60

The Batchewana Indian Band claims that the water and the land under the water of Lake Superior and the St. Mary's River, from the northern boundary of Batchewana Indian Reserve #15, as originally surveyed, to Whitefish Island in the St. Mary's River out to the international boundary, was not surrendered either by the Robinson Huron Treaty, 1850 or by the Pennefather Treaty, 1859.

Shawanaga Indian Land Claim re the location of the exterior boundaries of Shawanaga Indian Reserve #17 and Naiscoutaing Indian Reserve #17A — L.C. Hansen — 60

The Shawanaga Indian Band claims that the exterior boundaries of Shawanaga Indian Reserve #17 and Naiscoutaing Indian Reserve #17A were not surveyed in 1852 according to the descriptions of those Indian Reserves contained in the Robinson Huron Treaty, 1850, and that there is a discrepancy of approximately 9,000 acres between the area specified in the Treaty and the area surveyed in 1852.

Anishinabek Land Claim to an area north of the north shore of Lake Superior The Pic Heron, Pic Mobert, Pays Plat, Long Lake, Red Rock, Rocky Bay, Whitesand, and Sand Point Indian Bands claim that the area extending from Dorion, a community approximately forty miles east of Thunder Bay, to the mouth of the Pukaskwa River, north beyond the natural boundary of the watershed of Lake Superior, including Long Lake, and south to the international boundary, including the water, the bed and the islands of Lake Superior, was not surrendered in any Treaty, including the Robinson Superior Treaty, 1850.	L.C. Hansen	60
Federal Government Claim to Islands in the Kawartha Lakes The Federal Government claims, on behalf of Rice Lake (Hiawatha), Mud Lake (Curve Lake) and Scugog Lake Indian Bands, the unsold islands in the Kawartha Lakes (Trent Waterway).	L.C. Hansen	60
Rainy River Indian Land Claim The Rainy River Indian Band claims that the 1914-15 surrenders to the Federal Government of the six Indian Reserves in the District of Rainy River, dated April 7, 1914 and March 16, 1915, i.e. Little Forks	L.C. Hansen	60

Indian Reserve #10, Long Sault Indian Reserve #12, Long Sault Indian Reserve #13, The Bishop Indian Reserve #14, Paskonkin Indian Reserve #15, and Wild Lands Indian Reserve #15M, are null and void.

Algonquin Indian Land Claim — L.C. Hansen — 60

The Golden Lake Indian Band claims that the area in Ontario which corresponds to the watershed of the Ottawa River from L'Original to North Bay (about 3,000 square miles), was not surrendered by any Treaty entered into by the Algonquin Indian people.

Mississaugas of the New Credit Indian Land Claim to 200 acres adjacent to the Credit River — D.L. Rankin — 60

The Mississaugas of the New Credit Indian Band claims that 200 acres of land, which includes parts of lots in Ranges II and III on the east bank of the Credit River, Township of Toronto, Regional Municipality of Peel, is unsurrendered Indian Reserve land set apart for the use and benefit of that Band by the Royal Proclamation of October 7, 1763, and pursuant to the terms of Cession #22, dated February 28, 1820.

Mattagami Indian Land Claim re flooding of lands identified as part of Mattagami Indian Reserve #71 on Lake Mattagami — J.M. Minielly — 60

The Mattagami Indian Band claims that some of the land, identified as Indian Reserve #71, has been lost due to flooding by the operation of an Ontario Hydro dam on the Mattagami River at Kenogamissi Falls, north of that Indian Reserve.

Six Nations Indian Land Claim re "General Surrender of 1841" — D.J. Bourgeois — 60

The Six Nations Indian Band claims that the "General Surrender of 1841", with respect to the Six Nations Indian Reserve adjacent to the Grand River established under the Haldimand Proclamation of 1784 and the Simcoe Patent of 1793, was not valid.

Washagamis Bay Indian Land Claim to lands identified as Rat Portage Indian Reserve #38D — G.C.D. Jones — 60

The Washagamis Bay Indian Band claims certain islands in Clearwater Bay and at the mouth of White Partridge Bay, Lake of the Woods, which allegedly were used by Indian people for garden purposes, and were identified at various times between 1875 and 1913, by the Department of Indian Affairs, as Indian Reserve #38D.

Eagle Lake Indian Band #27 Claim to Headland to Headland Water Boundaries — J.M. Minielly — 60

The Eagle Lake Indian Band #27 claims

Headland to Headland water boundaries with respect to Eagle Lake Indian Reserve #27.

Mohawks of the Bay of Quinte Band Claim to 200 acres in Tyendinaga Township, County of Hastings. — D.L. Rankin — 60

This issue concerns the unincorporated "town" of Shannonville that is situated, at least in part, within the 200 acres of unsurrendered Indian Reserve land that were initially the subject of the Turton Penn Lease for 999 years, dated November 14, 1835.

There may also be outstanding Indian interests in road allowances, beds of navigable water bodies, reservations in patents and mineral rights, in surrendered Indian Reserve land in Tyendinaga Township, an area of approximately 61,500 acres.

The "Paypom Document", Treaty #3 — D.T. McNab — 60

Grand Council Treaty #3 claims the right to harvest wild rice under Treaty #3 on the basis of the "Paypom Document" which was identified by the Council as "the real treaty No. 3 held by Elders".

The development of Indian Trapping Territories and the registered Trap Line System in Ontario — L.C. Hansen — 60

The history of the development of the Registered Trap Line System that was implemented during the late 1940's by Ontario, based on Indian Trapping Territories throughout most of northern Ontario at that time and that System's use as "a means of managing and conserving fur bearing animals in Ontario".

Metis aboriginal land and treaty rights in Ontario — D.T. McNab — 60

A discussion paper on Metis and aboriginal land and treaty rights in Ontario.

Thessalon Indian Band's concerns re unsold surrendered Indian Reserve land, Indian Reserve #12, in Thessalon Township — J.M. Minielly — 60

The Thessalon Indian Band has concerns regarding parcels of surrendered Indian Reserve land, formerly part of Thessalon Indian Reserve #12, now in Thessalon Township, surrendered in the Pennefather Treaty of 1859, which have not been sold, although the land is currently occupied.

Assabaska Indian Land Claim — J.M. Minielly — 60

Summary of the land transactions of all or parts of eighteen lots in the Townships of McCrosson, Morson and Spohn, which make up the 1,600 acres identified by the Federal Department

of Indian Affairs as Indian Reserve #35E1 and Indian Reserve #35E2.

Land in Ontario that has been administered by Canada as "Indian Reserve Land" that has not been formally "set apart" as Indian Reserve land — J.M. Minielly — 60

List of land, including island(s), in Ontario which have been administered by the Government of Canada as "Indian Reserve land", for which there is no record extant that such land was formally "set apart" as Indian Reserve land.

The Boards of Arbitration between the Dominion of Canada and the Provinces of Ontario and Quebec, 1867-1907 — D.L. Rankin — 60

The history of the post-Confederation arbitrations and events surrounding them, including the specific issues that were submitted to the arbitrators, and the Federal-Provincial meetings and agreements entered into over those years concerning the liablility of the Government of Ontario, the Government of Quebec, and the Federal Government for Indian land claims in Ontario.

Historical Report on the Cession of the Islands in Georgian Bay — J.M. Minielly — 60

The history of the cession of the islands in Georgian Bay, and the concerns of the Chippewa Indian

people of Rama, Georgina Island and Christian Islands that they have not received any of the money from the sale or lease of these islands as per the terms of Cession #76, 1856.

The Lower Indian Reserve in Moore Township — D.J. Bourgeois — 60

The Walpole Island Indian Band claims an interest in the roads and road allowances through the land identified as the "Lower Indian Reserve".

The Location of the External Boundaries of Spanish River Indian Reserve #5 — D.J. Bourgeois — 60

The location of the external boundaries of Spanish River Indian Reserve #5.

Big Grassy Indian Band Claim to the Bed and Waters of the Big Grassy River — G.C.D. Jones — 60

The Big Grassy Indian Band claims that the bed and waters of the Big Grassy River adjacent to Big Grassy Indian Reserve #35G, including that portion purported to be part of the right-of-way at Provincial Highway #621, were part of that Indian Reserve and remain Indian Reserve land.

The Williams Treaties, 1923 — G.C.D. Jones — 60

The preparation for and signing of the Williams Treaties with the Mississaugas and Chippewas of Southern Ontario during the period 1916 to 1925.

Indian People and Polar Bear Provincial Park Region — G.C.D. Jones — 60

The history of the use and occupation of the Hudson Bay Lowlands, particularly with respect to Polar Bear Provincial Park, by Indian people.

Rainy River Indian Band Claim to Land Occupied by the Right-of-Way for Provincial Highway #11, Across Surrendered Long Sault Indian Reserves #12 and #13 — G.C.D. Jones — 60

The Rainy River Indian Band claims land occupied by the right-of-way for Provincial Highway #11 across surrendered Long Sault Indian Reserves #12 and #13.

Whitefish River Indian Band Claims to Land Occupied by Provincial Highway #6 — G.C.D. Jones — 60

The Whitefish River Indian Band claims that the Province of Ontario used and occupied land as a right-of-way for Provincial Highway #6 between the years 1922 and 1962-63 without legal authority, and related issues.

Potential Outstanding Indian Interests in the former Credit River Indian Reserve — D.L. Rankin — 60

History of the City of Sarnia and the Township of Sarnia as it relates to an area that was or is Sarnia Indian Reserve #45 — D.L. Rankin — 60

The Sarnia Indian Band claims that all road allowances that are surrendered

Indian Reserve land should continue to be used and maintained as roads by the local municipal government. The Band further claims that any other uses i.e. pipelines, telephone lines, etc. must be at the pleasure of and with compensation to the Sarnia Indian Band.

REMOTE SENSING

PROJECT	PRINCIPAL INVESTIGATORS	LOCATION
Satellite thematic mapping: testing of accuracy and maximum detail for publication of general land use/land cover maps.	S. Pala T. Ellis	34
Development of digital image analysis and mapping procedures for the operational inventory of agricultural crops: testing of analysis accuracy in areas of different crop complexity and agricultural practices; development of an interpretation key to distinguish and recognize various agricultural crops at various stages of growth on a range of remote sensing data types.	R. Mussakowski T. Ellis	34
Adaptation of existing digital image analysis techniques for land use, agriculture, forest and wetland mapping, to the analysis of new high-resolution satellite data.	S. Pala A. Jano	34
Development of software for efficient analysis of image data and for merging data from existing map sources (e.g., Ontario Basic Maps) with digital image data.	S. Pala A. Jano R. Raymond	34

Colour infrared negative aerial photography testing of application to forest inventory; testing of production of multispectral prints tailored to specific uses (joint study with Forest Resources Group).	V. Zsilinszky I. Ross D. Klimes	34
Development of digital analysis and mapping procedures for general forest typing from satellite data.	A. Jano S. Pala	34
Investigation of the potential applications and analysis requirements of new high-resolution airborne multispectral scanner data (MEIS II).	A. Jano S. Pala	34
Investigation of the value of SIR-B radar data, recorded from the Space Shuttle, mineral exploration in the Canadian Shield.	V. Singhroy S. Pala R. Mussakowski	34
Studies contributing to the determination of sensor requirements for land applications of the Canadian RADARSAT satellite (part of OCRS input to the federal RADARSAT Committee responsible for establishing RADARSAT sensor specifications).	I. Ross R. Mussakowski S. Pala	34
Development of computer techniques for the detection from satellite data of environmental change over time (e.g., to determine the effects on vegetation of industrial pollution, or of remedial measures): refinement of the technique for the isolation of significant changes over short periods - i.e., the development of an	R. Mussakowski	34

environmental monitoring procedure.

Engineering geology investigations: V. Singhroy 34

- study of the detection of soil mineralization changes indicative of underlying rock type, from the interpretation of vegetation patterns on a range of remote sensing data types (joint study with OGS);

- study of the identification of subsurface sand and gravel from soil moisture patterns interpretation from a range of remote sensing data types (joint study with OGS);

- development of operational procedures and specifications for planning and environ mental monitoring of pipelines using a range of remote sensing data types (joint study with pipeline companies);

- study of the identification of bedrock formations potentially suitable for nuclear waste diposal, from the interpretation of a range of remote sensing data types (joint study with Atomic Energy of Canada).

Joint study with the Aviation and Fire Management Centre on the feasibility and methodology of using aerial thermal imaging for real-time forest fire monitoring I. Ross 34

Research on the acquisition and processing of aerial photography and thermography for specific purposes: testing of techniques, instruments and products.	I. Ross D. Klimes	34

RENEWABLE RESOURCE RESEARCH FUND (1985-86)

PROJECT	PRINCIPAL INVESTIGATORS	LOCATION
Populations of small mammals in Algonquin Park.	J.B. Falls	9
Evaluating peat for containerized planting stock production.	V. Timmer	9
Reproductive modes and niche partitioning in large predatory fishes.	E.J. Crossman	8
Rehabilitation of fish resources in the Toronto area.	H.A. Regier	9
Factors affecting seed and cone survival in black spruce.	J.E. Laing	4
Tests of methods of large-scale vegetation mapping at Presqu'ile Provincial Park.	R. Suffling R. Howarth	6
Community size-structure in lakes and the estimation of standing crop. (Erindale)	W. Sprules	9
Influences of surrounding watershed and internal stream processes on trout food production.	J.C. Roff	4

Role of competition in wetland vegetation; a new model for wetland management.	P.A. Keddy	14
Pathogenic helminths of woodland caribou.	M.W. Lankester	15
Development of cost effective methods of monitoring production and harvest of furbearers.	S. Boutin	4
Science for wetlands and associated fisheries in lakes with manipulated water levels.	T.H. Whillans	10
Effects of rearing on trout behaviour.	D.L.G. Noakes	4
Effects of low dissolved oxygen on whitefish Coregonus clupeaformis.	J.S. Tait	12
Calibrating foliar nutrient standards for seed orchard establishment.	F.C. Lozano	9
Physiological adjustments by white-tailed deer to seasonal fluctuations in food availability.	G.A. Bubenik	4
An evaluation and genetic enhancement of Populus deltoides Bartr. Native of Ontario.	L. Zsuffa	9
Evaluation of acid/aluminium stress to fish early life stages by instrumental neutron activation analysis.	C.M. Wood & D.G. McDonald	7

Reproductive behaviour and ecology of pink salmon in the Carp River, Lake Superior.	M.A. Keenleyside	5
Preconditioning of coniferous container stock by induction of drought tolerance.	E.B. Dumbroff	6
Walleye production using In-situ Limnocorrals	D.J. McQueen	12
Study of the microbial degradation of triclorpyr (Garlon)	W.H. Baarschers	15
Stock discrimination in walleye based on divergence in the mitochondrial genome.	D.N. Hebert	53
Effects of timber harvesting on marten and small mammals.	P. Colgan	13
Fish communities of the lakes of the Black River Basin	H.H. Harvey	9
Conditioning white spruce (Picea glauca (Moench) Voss) transplants for overwinter storage by root pruning and wrenching.	R.J. Day	15
Pulse fishing of walleye in Henderson Lake.	W.T. Momot	15
Root colonizing fungi: The possible cause of growth abnormalities in conifer seedlings.	G. Hofstra & G. Boland	4
Production of a "Red Data List" of Ontario's rarest breeding birds.	P. Eagles	6

Control of the gypsy moth using sex pheromone lures containing pesticide.	P. Teal	4
Riparian forest plantations for wood production and stream rehabilitation: an integrated resource management approach.	A.M. Gordon & N.K. Kaushik	4
The role of seedling quality in successful reforestation programs in Ontario.	S.C. Grossnickle	9
Diversity and regenerative ability of plants in deciduous forests: effects of canopy opening size.	R.J. Reader	4
Development of cost effective management of wintering deer.	T. Nudds	4
The Rotifer fauna of the Bay of Quinte and its correlation with fish larva productivity.	T. Nogrady	13
Economic evaluation of wetland preservation.	W. van Vuuren	4

WILDLIFE

PROJECT	PRINCIPAL INVESTIGATOR	LOCATION
Population dynamics of black bear.	G.B. Kolenosky	35
Habitat use by black bears in relation to other bears, and to vegetation.	G.B. Kolenosky D.W. Smith	35
Movements and productivity of Hudson Bay polar bears (cooperative with Quebec, Manitoba, N.W.T. and Canadian Wildlife Service, 3+ year study).	G.B. Kolenosky C. Greenwood and Moosonee District Staff	35 39
Influence of winter ticks on behaviour, physiology and survival of moose.	E.M. Addison	35
Habitats used by moose for calving.	E.M. Addison	35
Fluctuations in reproduction of moose.	M. Wilton E.M. Addison M. Buss	41 35 49
Moose histopathology.	I.K. Barker	4
Relation between deer population, hunting and habitat.	D.J.T. Hussell	35
Factors affecting early survival of white-tailed fawns.	D.R. Voigt	35
Influence of supplementary feeding on	D.R. Voigt	35

winter survival of deer (cooperative with districts). Part I.	H. Smith W. Lintack M. Strathearn	28 43 44
Productivity - Survival and recruitment of deer herds (cooperative with districts). Part II.	D.R. Voigt H. Smith W. Lintack M. Strathearn	35 28 43 44
Analysis of snow cover in relation to deer survival.	P.C. Smith	35
Techniques to estimate changes in Canada goose productivity on the Hudson Bay Lowlands.	H.G. Lumsden	35
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Analysis of counts of migrating birds, taken by volunteers, to indicate wide-scale changes in numbers of song birds and raptors.	D.J.T. Hussell	35
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LOCATION KEY

		TELEPHONE
1.	**Aviation and Fire Management Centre** P.O. Box 310, Ontario Government Building 55 Church St. **Sault Ste. Marie**, Ontario P6A 5L8	705-942-1800
2.	**Regional Fire Centre** 93 Wilson Ave. **Timmins**, Ontario P4N 2S8	705-267-1401
3.	**Regional Fire Centre** 199 Larch St. **Sudbury**, Ontario P3E 5P9	705-675-4107
4.	**University of Guleph** Guelph, Ontario N1G 2W1	519-824-4120
5.	**University of Western Ontario** **London**, Ontario N6A 3G1	519-679-6490
6.	**University of Waterloo** **Waterloo**, Ontario N2L 3G1	519-885-1211

7. **McMaster University**
   1280 Main St. W.
   Hamilton, Ontario
   L8S 4M1
   416-595-9140

8. **Royal Ontario Museum**
   100 Queen's Park Cres.
   Toronto, Ontario
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   416-978-3692

9. **University of Toronto**
   Toronto, Ontario
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   416-978-2011

10. **Trent University**
    Peterborough, Ontario
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    705-748-1245

11. **Carleton University**
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    K1S 5B6
    613-231-4321

12. **York University**
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    Downsview, Ontario
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    416-667-2100

13. **Queen's University**
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14. **University of Ottawa**
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    613-231-3311

15. **Lakehead University**
    Thunder Bay, Ontario
    P7B 5E1
    807-345-2121

16. **Ontario Tree Breeding and Forest Biomass Institute**
    Maple, Ontario
    L0J 1E0 416-832-2761

17. **Forest Biology Laboratory**
    Box 490
    Sault Ste. Marie, Ontario
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18. **Northern Forest Research Unit**
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    Thunder Bay, Ontario
    P7B 5G5 807-767-1607

19. **MNR, Northwestern Region**
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    Kenora, Ontario
    P9N 3X9 807-468-3111

20. **Forest Resources - Pest Control Section**
    Maple, Ontario
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21. **MNR Fisheries Research Services**
    Maple, Ontario
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22. **MNR Fisheries Research Services**
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23. **MNR Fisheries Research Station**
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709-949-1231

24. **MNR Fisheries Research Services**
Lake Erie Research Station
R.R. #2
Wheatley, Ontario
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519-825-4171

25. **MNR Fisheries Research Services**
Glenora Research Station
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613-476-2400

26. **MNR Fisheries Branch**
Whitney Block
Queen's Park
Toronto, Ontario
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416-965-7887

27. **Lake Huron Fisheries Research Unit**
Ministry of Natural Resources
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Tehkummah, Ontario
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705-859-3137

28. **MNR Wildlife Branch**
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29. **Gartner Lee Associates**
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L3P 3J9
416-477-8400

30. **MNR Parks and Recreational Areas Branch**
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416-965-3981

31. **MNR, North Central Region**
425 James St. S.
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807-475-1211/
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32. **Ontario Ministry of Energy**
56 Wellesley St.
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416-965-5303

33. **MNR/Northeastern Region**
199 Larch St.
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705-675-4120

34. **Ontario Centre for Remote Sensing**
880 Bay St.
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35. **MNR Wildlife Research Section**
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36. **Fast Growing Hardwoods Group**
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P.O. Box 605, Oxford Ave.
Brockville, Ontario
K6V 5V8 613-342-8524

37. **MNR Northern Region Office**
60 Wilson Ave.
Timmins, Ontario
P4N 2S7 705-267-1401

38. **MNR Moosonee District Office**
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Moosonee, Ontario
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39. **MNR Northern Region Office**
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Cochrane, Ontario
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40. **MNR District Office**
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Simcoe, Ontario
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41. **MNR Algonquin Region Office**
Brendale Square
Manominee Street
Huntsville, Ontario
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42. **Sault College of Applied Arts and Technology**
443 Northern Avenue
Sault Ste. Marie, Ontario
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43. **MNR Huronia District Office**
Midhurst, Ontario
L0L 1X0 705-728-2900

44. **MNR North Bay District Office**
222 McIntyre Street, W.
North Bay, Ontario
P1B 8K7 705-474-5500

45. **Connaught Laboratories Ltd.**
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46. **Animal Diseases Research Institute**
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47. **University of Saskatchewan**
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48. **Leslie M. Frost Natural Resource Centre**
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49. **Long Point Bird Observatory**
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50. **MNR/Southwestern Region Office**
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51. **MNR District Offices**
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52. **MNR, Central Region**
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53. **University of Windsor**
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54. **MNR Fort Francis District Office**
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55. **MNR Wawa District Office**
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56. **Northern Forest Development Group**
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57. **MNR - Gogama District Office**
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58. **MNR Kirkland Lake District Office**
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59. **MNR Kapuskasing District Office**
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60. **Office of Indian Resource Policy**
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61. **MNR Ignace District Office**
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